

## Abstract

The invention relates to a centrifugal compressor unit comprising a driving means (50) for rotatably driving a rotor (52), and at least one compressor comprising a statoric body and an arrangement of blade wheels (56) mounted on a shaft which is rotatably driven by the rotor in the statoric body, the group formed by the motor and the or each compressor being mounted in a common housing (86) which is sealed from the gas used by the compressor. The compressor unit also comprises an arrangement of active bearings (60, 62, 64, 66, 67) for axially and radially guiding the rotor and the driven shaft, and a means for cooling the driving means and the guiding bearings by withdrawing the gas used by the compressor at the outlet of a first compression stage. The colling means comprises a set of internal conduits (80-1, 80-2, 80-3, 80-4, 80-5, 80-6) for supplying the driving means and the bearings with cooling gas, the cooling gas flow in the motor and the cooling gas flow in the bearing being separated and then converging upstream of the first compression stage.